THE ANNALS

AND

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[FOURTH SERIES.]

"..... per litora spargite muscum,
Naiades, et circùm vitreos considite fontes:
Pollice virgineo teneros hic carpite flores:
Floribus et pictum, divæ, replete canistrum.
At vos, o Nymphæ Craterides, ite sub undas;
Ite, recurvato variata corallia trunco
Vellite muscosis e rupibus, et mihi conchas
Ferte, Deæ pelagi, et pingui conchylia succo."
N. Parthenii Giannettasii Ecl. 1.

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I.—*Notice of a new Species of Deer from the Norfolk Forest-Bed.* By Randall Johnson, Esq.

[Plate I.]

It is well known that the Forest-bed which runs along the Norfolk coast abounds in mammalian remains of various species. Amongst these the remains of Cervidæ are largely represented; but they have not until lately received from palæontologists the attention so deservedly due to them. It would not, however, be right to omit to mention the labours of Dr. Falconer, who turned his attention to the Forest-bed fauna during the later years of his life, of the Rev. John Gunn, of Irstead, Norfolk, and, more recently, of Mr. Boyd Dawkins, all of whom have contributed to extend our knowledge on this subject. Among the many remarkable species found in this deposit there is one which is certainly new to Britain, and, so far as I am able to ascertain, one that has not been found in any deposit of corresponding age with the Forest-bed on the continent. This new form is represented by the left antler and a portion of the left frontal bone, which I had the good fortune to obtain myself from the Forest-bed at Hasbro, a

small village on the Norfolk coast between Cromer and Yarmouth, after a very low tide, during the month of March last. Mr. Gunn informs me that it is the upper portion of the Forest-bed which is exposed at the above-mentioned place, and consequently we may consider it of later date than that portion found near Cromer.

The species in question belongs to the large subgenus of palmated deer of which *Cervus megaceros*, the so-called Irish Elk, is a well-known example; and as it is characterized by the great breadth of the frontal bone, I propose to name it *Cervus latifrons*. In addition to this, the chief characteristics which this remarkable form presents are as follows:—the extreme shortness of the pedicle, if a pedicle can really be said to exist at all; the absence of a brow-antler, the beam of the antler being given off from the frontal bone nearly at right angles, with a slight curvature downwards, while at about the distance of twelve inches from the burr palmation commences and a huge tine is given off from the anterior surface of the beam, which curves round so as to form almost a semicircle. This tine, when compared with the size of the beam, will be found to be very largely developed.

If we compare this antler, possessing the above-named characteristics, with that of *Cervus megaceros*, to which the species in many respects is nearly allied (notably in its palmation and size), we shall find that there are considerable differences. *Cervus megaceros* always possesses a brow-antler, although sometimes but faintly indicated; in the new species we have seen that it is entirely absent. Again, in *Cervus megaceros* there is a great curvature of the beam outwards and in a certain degree upwards, whereas in *Cervus latifrons* the beam is extremely straight and with only the slightest trace of a downward curvature. Besides the differences which exist between the antlers of the two species, one would naturally expect to find differences in other portions of the skeleton; and that there are such is shown by the only portion I possess, viz. the left frontal bone before mentioned. In *Cervus megaceros*, if we look at the anterior part of the frontal bone we immediately notice that it is very narrow and rather convex, while in *Cervus latifrons* it is very broad and nearly flat.

The annexed drawing (Pl. I.), one fourth the natural size, will give an approximate idea of the specimen, the measurements of which I give together with those of another larger (but more imperfect) specimen of the same species, which is preserved in the Norwich Museum.

	Specimen figured.	Specimen in Norwich Museum.
	inches.	inches.
Extreme length	$19\frac{1}{8}$	21
Circumference in centre of beam	$7\frac{3}{4}$	$8\frac{3}{4}$
Length from burr to commencement of palmation	12	16
Length from midfrontal suture along curve to end of first tine	37	

Associated in the Forest-bed with *Cervus latifrons* there are found several other species of Cervidæ, which it may be interesting to mention. Of these some are peculiar to the Forest-bed, while others are common to the Forest-bed and other deposits of Pleistocene and Pliocene age both in England and on the continent. The following is a list of the species that have as yet been clearly determined :—

Cervus elaphus.
—— *capreolus.*
—— *megaceros.*
—— *martialis.*
—— *verticornis.*
Cervus Sedgwickii.
—— *latifrons*, n. sp.
—— *Carnutorum.*
—— *Polignacus.*

Of the nine species enumerated above two only have lived down to our own times, viz. the Stag (*Cervus elaphus*) and the Roebuck (*Cervus capreolus*). These two, together with *Cervus megaceros*, have not been found in strata of Pliocene age, and therefore, as Mr. Boyd Dawkins justly observes (Quart. Journ. Geol. Soc. Nov. 1, 1872, p. 410), "point rather forwards than backwards in time." *Cervus martialis*—a species with subcompressed ramified antlers, hitherto unmentioned in lists of Forest-bed Cervidæ, and closely allied to the Reindeer (*Cervus tarandus*)—leads us to draw the same conclusion, as it has been found in the Postpliocene sands of Riège, near Pezenas (*cf.* Gervais, 'Zoologie et Paléontologie Française,' p. 144). Of the remaining species, *Cervus verticornis* (rivalling *C. megaceros* in size and characterized by the downward and outward curvature of the brow-antler), *Cervus Sedgwickii* (a remarkable form with compressed antlers, described by Dr. Falconer, 'Palæontographical Memoirs,' vol. ii. p. 471), and *Cervus latifrons* have as yet been found only in the Forest-bed. *Cervus Carnutorum* and *C. Polignacus* are Pliocene forms, the former having been found in the Pliocene deposit of St. Prest, near Chartres, by M. Laugel, and the latter also in a Pliocene deposit at Mont Perrier, near Issoire, and figured by Croizet and Joubert.

The Forest-bed Cervidæ taken as a whole, although composed of a remarkable and peculiar assemblage of forms, show us, as has been pointed out by Mr. Boyd Dawkins in the valuable paper above mentioned, that the Forest-bed itself is rather of Pleistocene than Pliocene age; and as we know that *Elephas primigenius*, *E. antiquus*, and *Bison priscus*, all Pleistocene forms, are numbered amongst its fauna, we are justly entitled to consider that the data are such as warrant the above conclusion.

II.—*On the Affinities of the Genus* Stromatopora, *with Descriptions of two new Species.* By H. Alleyne Nicholson, M.D., D.Sc., M.A., F.R.S.E., Professor of Natural History in University College, Toronto.

In the 'Annals' for August 1873 I described four species of *Stromatopora* (one from the Upper Silurian, and three from the Devonian rocks of Canada), all of which exhibited certain relationships with the Spongida. As regards two of the species described in the paper alluded to, I have now obtained some further material, by which certain interesting points of structure are brought out, and the reference of these fossils to the Spongida is still more clearly established. I have also to describe for the first time two new and exceedingly interesting species of the genus—one from the Corniferous Limestone (Devonian), and the other from the Niagara Limestone (Upper Silurian). In the first place, however, it may be as well to discuss briefly the systematic position of the genus *Stromatopora*.

The genus *Stromatopora* of De Blainville includes a number of fossils of doubtful affinities, which have the common character of forming amorphous masses or irregular expansions, composed of delicate calcareous laminæ, arranged in successive strata one above the other, and separated from one another by minute vertical props, pillars, or dissepiments. Very often the successive laminæ are disposed round an imaginary centre or centres in a concentric manner, giving rise to spherical, hemispherical, or irregularly massive forms. In other cases the mass * is extended so as to form an expanded cup or irregular

* I would suggest that the term "sarcodeme" (Gr. *sarx*, flesh; *demos*, people) might advantageously be employed to designate the entire organism or colony amongst the compound Foraminifera and the Sponges. Some such term is certainly needed in treating of such problematical organisms as *Stromatopora*, of which the exact systematic position is doubtful.